IN THE CLAIMS:

1. (Currently amended) An apparatus for detecting cell chemotaxis and for isolating chemotactic cells, the apparatus including a cell observation chamber and a solution temperature control device, said cell observation chamber comprising:

a dish-shaped bottom support body with a window, for observing the movement of cells, provided in the center of a bottom part thereof,

a glass substrate adapted to be placed on a bottom surface of said bottom support body;

a dish-shaped intermediate support body with an opening ~~portion~~ formed in the center of a bottom part thereof, said intermediate support body being adapted to be attached to said bottom support body to press and fix said glass substrate from above onto bottom surface of said bottom support body;

a substrate with a plurality of through holes for guiding cell suspension containing solution and chemotactic factor containing solution therethrough, said substrate being adapted to be fixed onto a surface of a central part of said glass substrate, said substrate having at least a pair of wells and a flow path for fluid communication between said wells formed in a surface facing said glass substrate;

a packing member with a plurality of through holes for guiding said cell suspension containing solution and said chemotactic factor containing solution therethrough, said packing member being adapted to be fitted into said opening that is formed in the center of the bottom part of said intermediate support body to press said substrate from above;

a dish-shaped cover block body with a plurality of through holes for guiding said cell suspension containing solution and said chemotactic factor containing solution therethrough formed in the center of a bottom part thereof, said cover block body being adapted to be attached to said bottom support body with said intermediate support body attached thereto to press and fix said substrate from above onto said glass substrate through said packing member; and

said solution temperature control device comprising:

a first temperature controller comprising a first temperature sensor with a

temperature sensing part immersed in a solution within said cell observation chamber to directly measure the temperature of said solutions filling said pair of wells and said flow path, said first temperature controller controlling the temperature of said solutions to be a predetermined temperature with feedback of the ~~measured~~ temperature measured by said first temperature sensor; ~~and~~

a second temperature controller comprising a second temperature sensor for measuring the temperature of a heating section external to the cell observation chamber, said heating section heating ~~that heats~~ said cell observation chamber from outside, thereby indirectly heating said solutions filling said pair of wells and said flow path, said second temperature controller ~~and for~~ controlling said heating section to be a predetermined preheating temperature with feedback of the temperature measured by said second temperature sensor; and

a changeover switch for switching connection of the heating section between the first and second temperature controllers, whereby the heating section is operated under control of either the first temperature controller or the second temperature controller.

2. (Canceled)

3. (Previously presented) The apparatus for detecting cell chemotaxis and for isolating chemotactic cells according to claim 1, wherein said second temperature controller prevents said heating section from overheating.

4. (Currently amended) The ~~An~~ apparatus for detecting cell chemotaxis and for isolating chemotactic cells according to claim 1 wherein:

~~, the apparatus including a cell observation chamber and a solution temperature control device, said cell observation chamber comprising:~~

~~a dish-shaped bottom support body with a window, for observing the movement of cells, provided in the center of a bottom part thereof,~~

~~a glass substrate adapted to be placed on a bottom surface of said bottom support body;~~

~~a dish-shaped intermediate support body with an opening formed in the center of~~

~~a bottom part thereof, said intermediate support body being adapted to be attached to said bottom support body to press and fix said glass substrate from above onto bottom surface of said bottom support body;~~

~~a substrate with a plurality of through holes for guiding cell suspension containing solution and chemotactic factor containing solution therethrough, said substrate being adapted to be fixed onto a surface of a in the central part of said glass substrate, said substrate having at least a pair of wells and a flow path for fluid communication between said wells formed in a surface facing said glass substrate;~~

~~a packing member with a plurality of through holes for guiding said cell suspension containing solution and said chemotactic factor containing solution therethrough, said packing member being adapted to be fitted into said opening portion that is formed in the center of the bottom part of said intermediate support body to press said substrate from above;~~

~~a dish-shaped cover block body with a plurality of through holes for guiding said cell suspension containing solution and said chemotactic factor containing solution therethrough formed in the center of a bottom part thereof, said cover block body being adapted to be attached to said bottom support body with said intermediate support body attached thereto to press and fix said substrate from above onto said glass substrate through said packing member; and~~

~~wherein said solution temperature control device comprises:~~

~~a temperature sensor for directly measuring the temperature of said solutions filling said pair of wells and said flow path,~~

said <u>first</u> temperature sensor <u>is</u> ~~being~~ attached detachably to said cell observation chamber, and <u>has its</u> ~~having a~~ temperature sensing part immersed in solution in a liquid storage chamber formed in said cell observation chamber in an isolated position where said solution therein is indirectly heated by said heating section equally with said solutions filling said pair of wells and said flow path and where said liquid storage chamber is separate from and connected to said pair of wells and said flow path.

5. (Canceled)